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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,318	12/02/2003	Katsuki Hazama	20433-00601-US2	2698

7590 01/25/2007
Dean M Munyon
Meyertons Hood Kivlin Kowert & Goetzel PC
P O Box 398
Austin, TX 78767-0398

EXAMINER

BOOTH, RICHARD A

ART UNIT	PAPER NUMBER
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2812

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/725,318

Applicant(s)

HAZAMA, KATSUKI

Examiner

Richard A. Booth

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 134-138, 142-145 and 152-172 is/are pending in the application.
- 4a) Of the above claim(s) 159-169 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 134-138, 142-145, 152-158, and 170-172 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/29/06 has been entered.

Election/Restrictions

Newly submitted claims 159-169 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: they are directed to the method while the claims in the case have always been directed to the device

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 159-169 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 134-138, 142-145, 152, 154-158, and 170-172 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al., U.S. Patent 4,766,088 in view of Fujii et al., U.S. Patent 5,470,771 and Kajita, U.S. Patent 5,449,629.

Kono et al. shows the invention as claimed including a semiconductor device comprising : a memory transistor having a composite gate structure containing a first conductive film 26a, a first insulating film 30a, and a second conductive film 33a that overlie a first channel region, wherein said first conductive film is disposed closer to said first channel region than said second conductive film; and a peripheral transistor having a single gate structure containing a third conductive film 26b and a fourth conductive film 33d that overlie a second channel region, wherein said third conductive film is disposed closer to said second channel region than said fourth conductive film; wherein said first conductive film and said third conductive film are fabricated from a first common polysilicon layer (see figs. 4-9 and col. 4-line 5 to col. 7-line 21).

Kono et al. does not expressly disclose wherein said second, third, and fourth conductive films each have a conductivity that is substantially the same and that is higher than a conductivity of said first conductive film, and wherein the peripheral transistor includes films in contact over their cross-sections.

Fujii et al. discloses forming a floating gate which has a portion with a lower conductivity than other portions of the floating gate and the control gate (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Kono et al. so as to form the first conductive film with a lower conductivity than the second, third, and fourth because in such a way the device will operate more effectively. Furthermore, Kajita discloses forming a peripheral transistor including films 28,60 in contact over their cross-sections (see figs. 6B-6C and col. 11-line 37 to col. 12-line 10). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Kono et al. modified by Fujii et al. so as to form the peripheral transistor using films in contact over their cross-sections because in such a way it allows, for example, the use of undoped polysilicon since the dopants will be diffused from one film to another.

With respect to the particular impurity concentrations or thicknesses of the films, generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical.

Claim 153 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al., U.S. Patent 4,766,088 in view of Fujii et al., U.S. Patent 5,470,771 and Kajita, U.S. Patent 5,449,629 as applied to claims 134-138, 142-145, 152, 154-158, and 170-172 above, and further in view of Deustcher et al., U.S. Patent 6,103,576.

Kono et al. and Fujii et al. are applied as above but do not expressly disclose wherein the dielectric between the floating and control gate is ONO.

Deustcher et al. discloses that an advantage to having an ONO layer between a floating and control gate is that the pinholes are greatly reduced (see col. 2-lines 18-26). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Kono et al. modified by Fujii et al. and Kajita so as to have an ONO film between the floating and control gates because in such a way pinholes are reduced and it is possible to have a thinner layer than a conventional oxide would provide.

Response to Arguments

Applicant's arguments with respect to claims 134-138, 142-145, 152-158, and 170-172 have been considered but are moot in view of the new ground(s) of rejection.

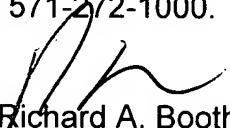
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is (571) 272-1668. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2812

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Richard A. Booth
Primary Examiner
Art Unit 2812

January 21, 2007